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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,672	01/21/2004	Stephen N. Sanderson	70226-9101	5156

7590 05/19/2006

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EXAMINER
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RUSSELL, CHRISTINA MARIE

ART UNIT	PAPER NUMBER
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2837

DATE MAILED: 05/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

EF

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/762,672		SANDERSON, STEPHEN N.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Christina Russell		2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### Specification

The amendments to the specification, or more specifically the deletion of the repeated patent number 5,567,902 on page 2, line 5, and the insertion of a description of Figure 3B on page 6, line 10, are accepted.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6, 8, and 10-13 are rejected under 35 U.S.C. 102(b) as being anticipated by the previous US patent to Sanderson (4,790,230).

3. In terms of claims 1 and 2, the previous Sanderson patent teaches a system for a musical keyboard type instrument comprising an insertable sensor, further comprising a sensing strip, that is placed at the back of the keys, both black and white, hidden from view, where the edge of the keys would meet the edge of the fallboard in the “up” position on a standard acoustic piano (see Figures 1 and 2, and column 7, lines 44-48), to sense their movement and sense and transmit other keynote expressions such as depression and velocity (see column 1, lines 18-20, column 4, lines 11-16, column 5,

lines 39-42, and column 9, lines 12-15). Said insertable sensor also does not require the disassembly of the keyboard instrument, since it is taught that is portable and can be transferred from one keyboard to another, and that the shape allows it to be inserted into any keyboard type instrument with standard size keys (see column 3, line 65 – column 4, line 6, column 4, lines 48-50, and column 8, lines 42-44).

4. As for claim 3, Sanderson further teaches said sensing strip having one or more sensors connected per key to sense a proportional amount of movement (see column 4, line 66 – column 5, line 3).

5. As for claims 4 and 5, Sanderson teaches all the above claimed elements of claim 1, including the sensor comprising an energy or voltage contact that produces an electrical signal along with an adjacent optical emitter and receiver that converts the energy provided by the keys into said electrical signal (see claim 1, lines 25-34, column 5, lines 43-49, column 7, lines 26-28, column 8, line 62-column 9, line 8, column 9, lines 58-60 and column 11, lines 17-26).

6. As for claims 6, 8, 10 and 11, Sanderson has previously taught, referring to Figure 2, of a strip or keyboard mold connected to the couplers that sense the movement and provide energy and are furthermore connected to said sensing strip. This mold and sensing strip have both an emitter and receiver coupled together to convert and transmit a field strength, or displacement current, to a corresponding electrical signal or voltage, and comprises multiple optical couplers and electrical contact points that switch on or off in relation to key depressions (see column 5, lines 3-17, 29-32 and 43-49, and Figures 4 and 5).

7. As for claims 12 and 13, it was previously stated above that the circuitry of the system can further process not only key depression but also key-note ON/OFF information and velocity (see references presented for claims 1 and 2).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over the previous Sanderson patent in view of the US patent to Lee (6,472,589).

10. Sanderson teaches all the above claimed elements of claims 1, 2, and 6, except for the mold and sensing strip comprising a magnetically coupled emitter and receiver to convert magnetic fields to electrical signal. Lee teaches such a magnetic system (see column 5, lines 6-15). It would have been obvious to one of ordinary skill the art, at the time of the invention, to mount such a magnetic system of Lee at the back of the keys, positioned in relation to the sensor (see column 1, lines 28-31), to allow for better measure and response times to the deviating velocities, and additional keyboard information.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over the previous Sanderson patent in view of the US patent to Fields (5,237,125).

12. Sanderson teaches all the above claimed elements of claims 1, 2, and 6, except for the mold comprising a piezo-electric element to convert mechanical energy to either a negative or positive electrical signal proportional to the displacement of the keys.

Fields teaches such a piezo-electric element (see column 2, lines 34-40, and column 4, lines 30-35). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to further advance the prior sensors with an additional sensitivity device that consists of only a thin, flexible film that can be incorporated into the already applied sensors placed over the keys. These piezo-electric devices of Fields comprise similar sensors as already stated and further detect velocity and key depressions just as the sensors of the previous Sanderson invention.

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over the previous Sanderson patent in view of the US patent to Brull (4,818,132).

14. Sanderson teaches all the above claimed elements of claim 1, except for the use of an insertable protector for the protection of the sensors from ambient light. Brull teaches such a protector. Simply stated in the abstract of Brull, he teaches the use of a similar type sensor but with an additional sweep device to protect the sensors from ambient light. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the sweep device of Brull into the sensing strip in the previous Sanderson patent. It would have been obvious to add a protective cover to Sanderson's already patented sensor strip, comprised of similar sensors as stated by Brull, since protection from such things as sunlight and overhead room lights, is a common factor taken into consideration when designing optical sensors.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Russell whose telephone number is 571-272-4350. The examiner can normally be reached on Mon-Fri, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula Bradley can be reached on 571-272-2800 ext. 33. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CR  
5/4/2006



MARLON T. FLETCHER  
PRIMARY EXAMINER